TTB Form 5154.1

Preparing formulas for submission to the Nonbeverage Products Laboratory

(240)264-1473

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Why should you be interested?

- Increasing workload impacts our ability to process submissions in a timely manner.
- Incomplete or incorrectly formatted submissions require more time and effort to process.
- Number 2 intensifies the problem in number 1.





What types of submissions do we see?

Roughly 80 to 90% of the formulas processed by the Nonbeverage Products Laboratory fall into two categories

- Compounded Flavors
- Simple Extracts



Can you spot the problems in this submission?

Formula approval: OMB No. 1512-0095 (09/30/98)						
DEPARTMENT OF THE TREASURY 1. FC						A NUMBER
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS						75
FORMULA AND PROCESS FOR NONBEVERAGE PRODUCT						ohol, Rum)
(See instructions attached-Prep				ad)	PROOF OF SE	PIRITS ON WHICH
3. NAME OF PRODUCT.	ľ	4. CHECK IF		5. NUMBER OF DAYS TO	DRAWBACK V	WILL BE CLAIMED.
Pineapple Flavor		WILL BE S	SUBMITTED	COMPLETE PROCESS		
т іпеарріє і іачої				1		
6. NAME OF THE MANUFACTURER & ADDRESS W				O OF PRODUCT:	8. FORMULA	AS SUPERSEDED.
BE PRODUCED (if multiple production sites, list other a	addresses on re	everse).	1 =	EDICINAL PREPARATION		
Uncle John's Flavors of Jupiter	•		FLAVOR/ FLAVO			
·			FOOD PRODU	SOLUTE ALCOHOL	10 ALCOHOL	CONTENT BY VOLUME
1401 Cherry Lane				ED. (See instructions)		IED PRODUCT.
Offshoresville, MD 20850				,		
·				6.70%	6	5.7 +/- 3
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. (See instructions).	A. DOES PRODUC B. DOES PROI (Yes or No) C. STATE PA SYNTHET D. DOES PRODUC E. ARE ALL INGRE	CT CONTAIN NATUR. DUCT CONTAIN ARTS PER MILLI TIC MALTOL CT CONTAIN A COLO	ION IN PRODUCT OF	R NO) % ARTIFICIAL FLAVORING <i>(Exclu</i>	ETHYL VANILLIN	l Vanillin,Maltol, Ethyl Maltol)?
13. FORMULA AND PROCESS (Use Additional Space on Reverse if Nece	essary).			5 70 II (0 0 4	IV	
Ethanol				5.70 lbs (0.84 g	gaı)	
Natural Acetic Acid				1.25 lbs		
Pineapple Essence (2-4% alcoh	ıol)		7.25 lbs (0.91 gal)			
Ethyl Caproate and other FEMA	ر GRAS r	natural e	esters	` ,		
Vanillin				0.75 lbs		
Propylene Glycol				81.65 lbs		
l				01.00 100		
Final yield				100.00 lbs (11.	 .90 gal)	
14. CONTACT PERSON (Include Area Code & Phone No.)	15. SIGNATU	IRE & TITLE (OF APPLICATION	N OR AUTHORIZED AGEN	NT.	16. DATE.
Uncle John Jr. (123)456-7890	Uncle Ton	hn Tr.				9/6/2002

	Formula approval: OMB N	lo. 1512-0095 (09/30/98)					
DEPARTMENT OF THE TREASURY 1. FORMULA NUMBER BUREAU OF ALCOHOL, TORACCO AND FIREARMS 75							
	BUREAU OF ALCOHOL TORACCO AND FIREARMS						
	Nat, art, or both? RODUCT	2. KIND (e.g. Alcohol, Rum)	-4T 67				
(See instructions attach	d abroad) 4. CHECK IF SAMPLE 5. NUMBER OF D.	PROOF OF SPIRITS ON WHICH	18				
3. NAME OF PRODUCT.	WILL BE SUBMITTED COMPLETE PRO		1000				
Pineapple Flavor	WILL BE GOSMITTED STATE STATE		1				
		1 /	Y 3 45				
6. NAME OF THE MANUFACTURER & ADDRESS W		8. ORMULAS SUPERSEDED	William Com				
BE PRODUCED (if multiple production sites, list other	I <u>—</u>	ION	200				
Uncle John's Flavors of Jupite	FLAVOR/ FLAVORING EXTRACT	/	A STATE OF				
	FOOD PRODUCT PERF		ME				
1401 Cherry Lane	VOLUME USED. (See instruction	OF FINISHED PRODUCT.	1000				
Offshoresville, MD 20850	6.70%	6.7 +/- 3					
		0.7 +/- 3					
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE	12. IF FINISHED PRODUCT IS TO BE USED IN ALCOHOLIC BEVERAGES:		The State of the S				
ALCOHOL BY VOLUME USED. (See instructions).	A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO) B. DOES PRODUCT CONTAIN OPERATED THAN 0.49 APPLICATION FLAVORING.	RING (Excluding Vanillin, Ethyl Vanillin, Maltol, Ethy	0//2				
	(Yes or No) no indication	NITO (Exoluting Varianti, Ethy) Varianti, indicol, Ethy	*				
	C STATE DARTS	ETHYL VANILLIN	V				
	SYNTHETIC N Of proof	LMALTOL					
			II sources				
13. FORMULA AND PROCESS (Use Additional Space on Reverse if Nec	E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR REST	RICTION? (YES OR NO)	f alcohol?				
Ethanol	5.70 lbs (0.84 gal)					
Natural Acetic Acid	1.25 lbs	9 /	correct				
	11-0 11-0		olerance?				
Pineapple Essence (2-4% alcoh	,	0.91 gal)	The Later				
Ethyl Caproate and other FEMA	3.40 lbs		10-50				
Vanillin	Ethyl caproate 0.75 lbs						
Propylene Givcol	predominant? 81.65 lbs		1000				
1. 100,10110 01,001			3 110 3				
Final data	quantity?	- (44.001)					
Final yield	100.00 lbs	s (11.90 gal)					
			10000				
14. CONTACT PERSON (Include Area Code & Phon	at or art? TITLE OF APPLICATION OR AUTHORIZE	ED AGENT. 16. DATE.					
	I Uncle John Tr						
Uncle John Jr. (123)456-7890	9/6/2002						

Formula approval: OMB No. 1512-0095 (09/30/98)								
	DEPARTMENT OF THE TREASURY 1. FORMULA							
BUREAU OF ALCOI		75						
FORMULA AND PROCE				2. KIND (e.g. Alco	·			
(See instructions attached-Pre					PIRITS ON WHICH			
3. NAME OF PRODUCT.	4. CHECK IF	SUBMITTED	5. NUMBER OF DAYS TO COMPLETE PROCESS	DRAWBACK V	VILL BE CLAIMED.			
Nat & Art Pineapple	WILL BE				190 Proof			
			1					
6. NAME OF THE MANUFACTURER & ADDRESS W	HERE PRODUCTS WILL	7. CHECK KINI	D OF PRODUCT:	8. FORMULA	AS SUPERSEDED.			
BE PRODUCED (if multiple production sites, list other	addresses on reverse).		MEDICINAL PREPARATION					
Unale John's Flavors of Juniter		FLAVOR/ FLAV						
Uncle John's Flavors of Jupiter		FOOD PROD	UCT PERFUME BSOLUTE ALCOHOL	10. ALCOHOL	CONTENT BY VOLUME			
1401 Cherry Lane			SED. (See instructions)		ED PRODUCT.			
Offshoresville, MD 20850			,		0./4			
			6.70%	б	.9 +/- 1			
11. IF MADE WITH RECOVERED SPIRITS: ELIGIBLE PLUS RECOVERED ABSOLUTE								
ALCOHOL BY VOLUME USED. (See instructions).	A. DOES PRODUCT CONTAIN NATUR			. v =				
	(Yes or No)	GREATER THAN 0.1	% ARTIFICIAL FLAVORING (Exclu	iding vanillin, ⊑tnyi	vaniiin,Maitoi, Etnyi Maitoi)?			
	C. STATE PARTS PER MILL	ION IN PRODUCT O	F: VANILLIN	ETHYL VANILLIN				
	SYNTHETIC MALTOL		ETHYL MALTOL					
	D. DOES PRODUCT CONTAIN A COLO	OR ADDITIVE?	IF YES, WHICH?					
		D BY FDA FOR USE WITH	OUT LIMITATION OR RESTRICTION? (YE	S OR NO)				
13. FORMULA AND PROCESS (Use Additional Space on Reverse if Nece	essary).		5 70 II . /0 0 4	1\				
Alcohol 190 proof			5.70 lbs (0.84 (gai)				
Natural Acetic Acid			1.25 lbs					
Pineapple Essence (2-4% alcoh	nol)		7.25 lbs (0.91 g	gal)				
Ethyl Caproate (1.0 lbs) and other	FEMA GRAS nat	ural esters	,	,				
artificial vanillin (ex tumeric)			0.75 lbs					
Propylene Glycol			81.65 lbs					
1,7 = = 7 = -								
Final yield			100.00 lbs (11.	_ 90 nal)				
That yiold			100.00 100 (11.	oo gai)				
14. CONTACT PERSON (Include Area Code & Phone No.)	15. SIGNATURE & TITLE	OF APPLICATIO	N OR AUTHORIZED AGEN	NT.	16. DATE.			
Uncle John Jr. (123)456-7890	Uncle John Jr.				9/6/2002			

Calculations:

- 1) Item 9 Calculate Eligible Absolute Alcohol (by volume). The source in this formula is the 190 Proof Alcohol:
 - a) Convert weight to volume 5.70 lbs ÷ 6.7943 lbs/gal = 0.84 gal
 - b) Calc absolute gallons of ethanol (abs gal EtOH) $0.84 \text{ gal} \times 0.95 = 0.80 \text{ abs gal EtOH}$
 - c) Divide abs gal EtOH by the actual yield 0.80 abs gal EtOH ÷ 11.90 gal = 0.067
 - d) $0.067 \times 100 = 6.70\%$ (item 9)

- 2) Item 10 Calculated by dividing the total alcohol content by the theoretical yield. Note that there are two sources of alcohol in the formula:
 - a) The abs gal EtOH from 190 proof alcohol was calculated for item $9 \rightarrow 0.80$ abs gal EtOH
 - b) Calculate the abs gal EtOH from the Pineapple Essence $0.91 \text{ gal} \times 0.03 \text{ (mid-range)} = 0.027 \text{ abs gal EtOH}$
 - c) Divide the <u>sum of the abs gal EtOH</u> by the theoretical yield \rightarrow (0.80 + 0.027) abs gal EtOH \div 11.90 gal = **0.069 or 6.9%**

The tolerance for item 10 can be found in the **Tolerance Table**.

Note: for simple mixtures, the theoretical yield ~ actual yield.

Tolerance table for item 10 – TTB form 5154.1

	Tolerances (Absolute %)					
Alcohol percentage	Simple mixture	Filtration				
(200°) > 95	93 – 100	91 – 100				
$(190^{\circ}) > 90$	88 – 95	86 – 95				
>80 – 90	± 3.5	± 4.5				
>70 - 80	± 3.0	± 4.0				
>60 – 70	± 2.5	± 3.5				
>40 - 60	± 2.0	± 3.0				
>20 - 40	± 1.5	± 2.5				
1 – 20	± 1.0	± 2.0				

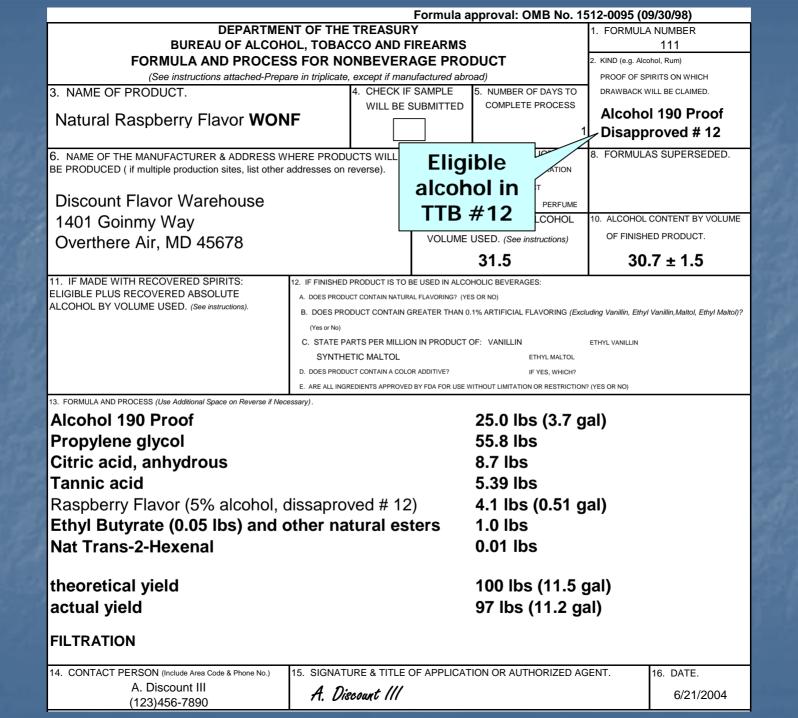
Can you spot the problems in this submission?

			Formula a	proval: OMP No. 1	E12 000E ((00/20/09)
DEPARTME	NT OF THE TR	EASUR		oproval: OMB No. 1	1. FORMUL	
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS					iii i oranoz	111
FORMULA AND PROCES	SS FOR NONE	BEVER	AGE PROD	DUCT	2. KIND (e.g. Ald	cohol, Rum)
(See instructions attached-Prep					_	PIRITS ON WHICH
3. NAME OF PRODUCT.				5. NUMBER OF DAYS TO COMPLETE PROCESS	DRAWBACK	WILL BE CLAIMED.
Natural Raspberry Flavor	'	WILL BE 8	SUBMITTED	COMPLETE PROCESS	Alcoho	ol 190 Proof
				1		
6. NAME OF THE MANUFACTURER & ADDRESS V				ND OF PRODUCT:	8. FORMUL	AS SUPERSEDED.
BE PRODUCED (if multiple production sites, list other	addresses on rever	se).	I <u> </u>	/ MEDICINAL PREPARATION		
Discount Flavor Warehouse			☐ FOOD PRO	AVORING EXTRACT DUCT PERFUME		
1401 Goinmy Way				ABSOLUTE ALCOHOL	10. ALCOHOL	CONTENT BY VOLUME
Overthere Air, MD 45678				JSED. (See instructions)		HED PRODUCT.
Overtilere All, IVID 43070				31.5	30	0.7 ± 1.5
ALCOHOL BY VOLUME USED. (See instructions).	(Yes or No) C. STATE PARTS SYNTHETIC N D. DOES PRODUCT CO	PER MILLIO MALTOL NTAIN A COLO	IN IN PRODUCT O	% ARTIFICIAL FLAVORING (Exc F: VANILLIN ETHYL MALTOL IF YES, WHICH? THOUT LIMITATION OR RESTRICTION	ETHYL VANILLIN	vl Vanillin,Maltol, Ethyl Maltol)?
13. FORMULA AND PROCESS (Use Additional Space on Reverse if Ne	cessary).					
Alcohol 190 Proof				25.0%		
Propylene glycol				55.8%		
Citric acid, anhydrous				8.7%		
Tannic acid				5.39%		
Raspberry Flavor				4.1%		
FEMA GRAS natural esters				1.0%		
Nat Trans-2-Hexenal				0.01%		
yield				100%		
FILTRATION						
14. CONTACT PERSON (Include Area Code & Phone No.)	15. SIGNATURE	& TITLE (OF APPLICATI	ON OR AUTHORIZED AC	GENT.	16. DATE.
A. Discount III						6/21/2004

(123)456-7890



	Formula approval: OMB No. 1512-0095 (09/30/98)								
	DEPARTMENT OF THE TREASURY 1. FORMULA NUMBER								
	BUREAU OF ALCOHOL, TOBACCO AND FIREARMS								111
	FORMULA AND P							2. KIND (e.g. Alco	
ŀ	(See instructions attack) 3. NAME OF PRODUCT.	ched-Prepa	are in triplicate	, except if mar 4. CHECK IF		5. NUMBER OF D	AVS TO		IRITS ON WHICH /ILL BE CLAIMED.
	3. NAME OF PRODUCT.				SUBMITTED				
ď	Natural Raspberry Flav	or						Alcoho	l 190 Proof
7	. ,						1		
ı	6. NAME OF THE MANUFACTURER & AD	DRESS	is it a V	NONF?	CHECK	KIND OF PRODUC	CT:	8. FORMULA	AS SUPERSEDED.
	BE PRODUCED (if multiple production sites	, list othe	is it a t	vpe?	☐ MEDIC	INE/ MEDICINAL PREPAR	RATION		
6	D:			, , , , , , , , , , , , , , , , , , , 	FLAVOR/	FLAVORING EXTRACT			
ď	Discount Flavor Warehou	use			☐ FOOD I		PERFUME		
	1401 Goinmy Way				9. ELIGIBI	LE ABSOLUTE ALC	OHOL		CONTENT BY VOLUME
	Overthere Air, MD 45678	}			VOLUM	E USED. (See instruc	ctions)	OF FINISH	ED PRODUCT.
ļ	,					31.5		30	.7 ± 1.5
	11. IF MADE WITH RECOVERED SPIRITS	:	12. IF FINISHED	PRODUCT IS TO	BE USED IN AL	COHOLIC BEVERAGES:			
	ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. (See instruction	a)	A. DOES PRODU	JCT CONTAIN NATUR	AL FLAVORING?	(YES OR NO)			
7	ALCOHOL DI VOLCIVIL COLD. (Gee instruction	3).		DDUCT CONTAIN (GREATER THAN	0.1% ARTIFICIAL FLAVO	ORING (Exclu	ıding Vanillin, Ethyl	Vanillin,Maltol, Ethyl Maltol)?
5			(Yes or No)	ADTO DED MILLIO		T OF: VANILLIN		ETHYL VANILLIN	
C				ETIC MALTOL	IN IN PRODUC		L MALTOL	ETHYL VANILLIN	
ì	r				DR ADDITIVE?		S, WHICH?		
		com	pounde	ed flavo	or s	E WITHOUT LIMITATION OR F	RESTRICTION?	(YES OR NO)	
	13. FORMULA AND PROCESS (Use Additional Space on	with	out sur	poleme	ntal	0= 00/			
	Alcohol 190 Proof		rmation	•		25.0%		11- 1	tarlet as at
Ī,	Propylene glycol				s It	55.8%		•	eight pct
í	Citric acid, anhydrous	cont	tain alc	ohol?		8.7%	OI	r volum	e pct?)
	Tannic acid					5.39%			
	Raspberry Flavor					4.1%			
	FEMA GRAS natural est	ore				1.0%			
		CI 3	nr	edomir	ant			De	nsity?
	Nat Trans-2-Hexenal predominant natural ester? 0.01%								
Ä,			na	turai es	iter?				
9	yield					100% —			
	EII TDATION						n	o actua	al yield
	ILINATION								
	14. CONTACT PERSON (Include Area Code & Ph	one No.)	15. SIGNAT	IDE O TITI E	OF APPLICA	ATION OR AUTHOR	RIZED AG	ENT.	16. DATE.
	A. Discount III			signat	ure				6/21/2004
	FILTRATION 14. CONTACT PERSON (Include Area Code & Ph	none No.)	15. SIGNAT					o actua	16. DATE.



Calculations:

- 1. Item 9 two sources of eligible alcohol in this formula
 - a) First source of eligible alcohol 190 proof ethanol

25.0 lbs
$$\div$$
 6.7943 lbs/gal = 3.68 gal 3.68 gal \times 0.95 = 3.50 gal abs EtOH

b) Second source of eligible alcohol - the disapproved Raspberry Flavor

$$0.51 \text{ gal} \times 0.050 = 0.026 \text{ gal abs EtOH}$$

c) Add up the gallons of absolute alcohol and divide by the actual yield

(3.50 + 0.026) gal abs EtOH \div 11.2 gal = 0.315 or **31.5%**

- 2) Item 10 calculation use theoretical yield in this calculation
 - a) In this example, the calculation of absolute gallons of ethanol is the same as in item 9.
 - (3.50 + 0.026) gal abs EtOH = 3.526 gal abs EtOH
 - b) divide this by the theoretical yield to get the ethanol content for item 10:
 - 3.526 gal abs EtOH \div 11.5 gal = 0.307 or **30.7%**
 - c) The tolerance for item 10 can be found in the **Tolerance**Table.

Tolerance table for item 10 – TTB form 5154.1

	Tolerances (Absolute %)					
Alcohol percentage	Simple mixture	Filtration				
(200°) > 95	93 – 100	91 – 100				
$(190^{\circ}) > 90$	88 – 95	86 – 95				
>80 – 90	± 3.5	± 4.5				
>70 - 80	± 3.0	± 4.0				
>60 – 70	± 2.5	± 3.5				
>40 - 60	± 2.0	± 3.0				
>20 - 40	± 1.5	± 2.5				
1 – 20	± 1.0	± 2.0				

Filtered Products:

Why do we use the final yield to calculate item 9?

It is not simply the ethanol in the final product that is calculated, it is the ethanol used in the manufacturing process. This is especially important for products where some or all of the ethanol was lost due to processing.

Why do we use the theoretical yield to calculate item 10?

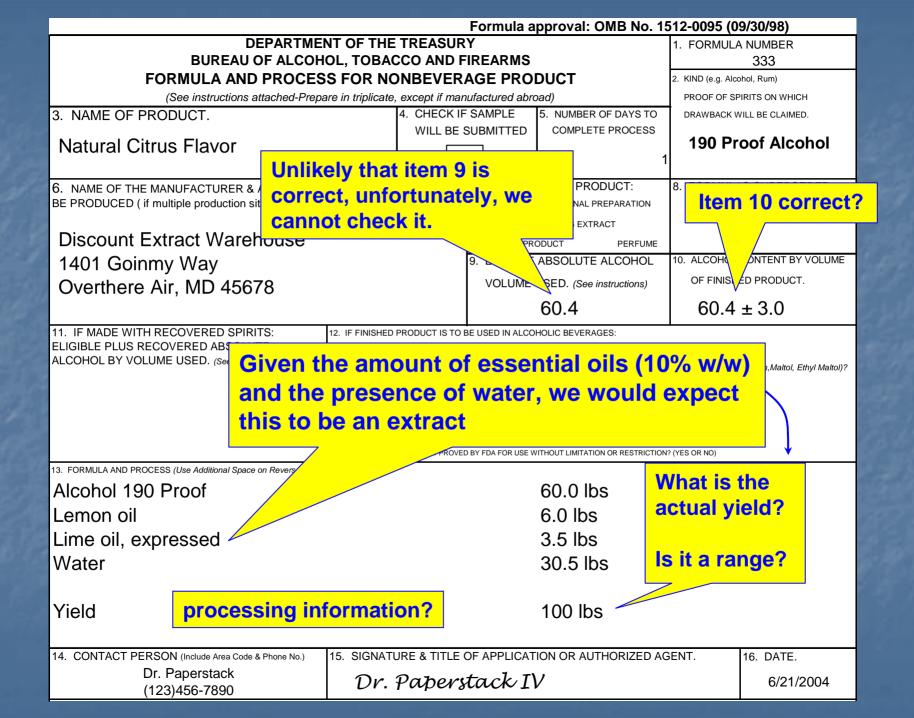
When filtration is the only other processing step, the ethanol content in the final product will be determined by the proportioning of **miscible** ingredients during mixing (even though there will be a loss of product to the filtration step).

Since filtration is not a selective process for dissolved components we would not expect the ethanol level to change.



Can you spot the problems in this submission?

Formula approval: OMB No. 1512-0095 (09/30/98)						
DEPARTME	1. FORMULA	NUMBER				
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS					333	
FORMULA AND PROCES	S FOR NONBE	VERAGE PRO	DUCT	2. KIND (e.g. Alco	ohol, Rum)	
(See instructions attached-Prepa			oad)	PROOF OF SP	PIRITS ON WHICH	
3. NAME OF PRODUCT.	4. CHE	ECK IF SAMPLE	5. NUMBER OF DAYS TO	DRAWBACK W	VILL BE CLAIMED.	
Natural Cityra Flavor	WIL	L BE SUBMITTED	COMPLETE PROCESS	100 Pr	oof Alcohol	
Natural Citrus Flavor			1	190 F1	OOI AICOIIOI	
6. NAME OF THE MANUFACTURER & ADDRESS W		122	IND OF PRODUCT:	8. FORMULA	AS SUPERSEDED.	
BE PRODUCED (if multiple production sites, list other a	addresses on reverse)		E/ MEDICINAL PREPARATION			
Diagonat France Monches		FLAVOR/ FL	LAVORING EXTRACT			
Discount Extract Warehouse		☐ FOOD PR				
1401 Goinmy Way		9. ELIGIBLE	ABSOLUTE ALCOHOL	10. ALCOHOL	CONTENT BY VOLUME	
Overthere Air, MD 45678		VOLUME	USED. (See instructions)	OF FINISH	ED PRODUCT.	
			60.4	60.4	± 3.0	
11. IF MADE WITH RECOVERED SPIRITS:	12. IF FINISHED PRODUCT	T IS TO BE USED IN ALCO	HOLIC BEVERAGES:			
ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. (See instructions).	A. DOES PRODUCT CONTAIN NATURAL FLAVORING? (YES OR NO)					
ALCOHOL BY VOLUME USED. (See Instructions).	B. DOES PRODUCT CONTAIN GREATER THAN 0.1% ARTIFICIAL FLAVORING (Excluding Vanillin, Ethyl Vanillin, Maltol, Ethyl Maltol)?					
	(Yes or No)					
		R MILLION IN PRODUCT (ETHYL VANILLIN		
	SYNTHETIC MAL		ETHYL MALTOL			
	D. DOES PRODUCT CONTAIL		IF YES, WHICH? WITHOUT LIMITATION OR RESTRICTION?	2 (VES OR NO)		
13. FORMULA AND PROCESS (Use Additional Space on Reverse if Nece		PPROVED BY PDA FOR USE V	VITHOUT LIMITATION OR RESTRICTION	(TES OK NO)		
Alcohol 190 Proof	issury).		60.0 lbs			
Lemon oil			6.0 lbs			
Lime oil, expressed			3.5 lbs			
Water	30.5 lbs					
NO. 1.1			400 !!			
Yield			100 lbs			
14. CONTACT PERSON (Include Area Code & Phone No.)	15. SIGNATURE & T	TITLE OF APPLICAT	TION OR AUTHORIZED AG	ENT.	16. DATE.	
Dr. Paperstack (123)456-7890	Dr. Pap	erstack I		6/21/2004		



	Formula approval: OMB No. 1512-0095 (09/30/98)							
	DEPARTMENT OF THE TREASURY 1. FORMULA NUMBER							
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS							333	
	FORMULA AND PROCES	2. KIND (e.g. Alco	ohol, Rum)					
	(See instructions attached-Prepa	are in triplicate,	-		•	PROOF OF SP	PIRITS ON WHICH	
3.	NAME OF PRODUCT.		4. CHECK IF		5. NUMBER OF DAYS TO	DRAWBACK W	VILL BE CLAIMED.	
l N	atural Citrus Flavor		WILL BE	SUBMITTED	COMPLETE PROCESS	190 Pr	oof Alcohol	
14	aturai Citrus Flavoi				1		OOI AICOIIOI	
á								
	NAME OF THE MANUFACTURER & ADDRESS W				IND OF PRODUCT:	8. FORMULA	AS SUPERSEDED.	
BE I	PRODUCED (if multiple production sites, list other	addresses on i	reverse).		E/ MEDICINAL PREPARATION			
	issaunt Extract Warehouse			I · · ·	AVORING EXTRACT			
	iscount Extract Warehouse			☐ FOOD PR				
14	401 Goinmy Way			9. ELIGIBLE	ABSOLUTE ALCOHOL		CONTENT BY VOLUME	
0	verthere Air, MD 45678			VOLUME	USED. (See instructions)	OF FINISHI	ED PRODUCT.	
	,			73.0	- 77.7	67.2	± 3.5	
11.	IF MADE WITH RECOVERED SPIRITS:	12. IF FINISHED	PRODUCT IS TO	BE USED IN ALCO	HOLIC BEVERAGES:			
	GIBLE PLUS RECOVERED ABSOLUTE	A. DOES PRODU	ICT CONTAIN NATUR	AL FLAVORING? (YE	S OR NO)			
ALC	COHOL BY VOLUME USED. (See instructions).	B. DOES PRO	DUCT CONTAIN	GREATER THAN 0.	1% ARTIFICIAL FLAVORING (Excl	uding Vanillin, Ethyl	Vanillin,Maltol, Ethyl Maltol)?	
5		(Yes or No)						
		C. STATE PARTS PER MILLION IN PRODUCT OF: VANILLIN				ETHYL VANILLIN		
7		SYNTHETIC MALTOL ETHYL MALTOL						
×		D. DOES PRODUCT CONTAIN A COLOR ADDITIVE? IF YES, WHICH? E. ARE ALL INGREDIENTS APPROVED BY FDA FOR USE WITHOUT LIMITATION OR RESTRICTION						
12 5	FORMULA AND PROCESS (Use Additional Space on Reverse if Nec	-	REDIENTS APPROVE	D BY FDA FOR USE V	VITHOUT LIMITATION OR RESTRICTION	? (YES OR NO)		
	· · · · · ·	essary).			CO O lba (0.00)	~ a l \		
	cohol 190 Proof				60.0 lbs (8.83 g	gai)		
Le	emon oil				6.0 lbs			
Lir	me oil, expressed				3.5 lbs			
	ater				30.5 lbs			
V V	ator				00.0 103		I	
-							I	
Ini	itial yield				100 lbs		I	
							I	
۸۵	ctual yield (range)				78 - 83 lbs		- 1	
AC	stuai yieiu (rarige)						I	
		(10.8 - 11.5 ga				I)	ı	
1							I	
Pr	rocess: Combine ingredients v	vhile miv	ina ΔII	ow oil to	senarate Disca	ard ton Is	aver	
	Process: Combine ingredients while mixing. Allow oil to separate. Discard top layer.							
	Filter bottom layer with magnesium carbonate.							
14.	CONTACT PERSON (Include Area Code & Phone No.)	15. SIGNATI	URE & TITLE	OF APPLICAT	TON OR AUTHORIZED AG	SENT.	16. DATE.	
	Dr. Paperstack	D _K	Dahow	tack, TI	1		6/21/2004	
	(123)456-7890	Dr. Paperstack IV					0/21/2004	

Calculations:

- 1. Item 9 calculation eligible alcohol comes from the 190 proof ethanol
 - a) Calculate the volume of absolute ethanol

$$60.0 \text{ lbs} \div 6.7943 \text{ lbs/gal} = 8.83 \text{ gal} \\ 8.83 \text{ gal} \times 0.95 = 8.39 \text{ gal abs EtOH}$$

b) next, divide by the final yield (actual yield)

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low end of yield range
8.39 gal abs EtOH ÷10.8 gal = 0.777 or 77.7%
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high end of yield range 8.39 gal abs EtOH ÷ 11.5 gal = 0.730 or **73.0%**

This provides the range for the eligible alcohol in item 9

- 2. Item 10 calculation
 - a) Volume of the <u>starting menstruum</u>. The <u>starting menstruum</u> is the ethanol and water along with other dissolved components (not the oil).

- b) Item 10 = (gal abs EtOH) ÷ (vol of starting menstruum) 8.39 gal abs EtOH ÷ 12.49 gallons = 0.672 or 67.2%
- c) Apply the tolerance used for filtered products to item 10.

Tolerance table for item 10 – TTB form 5154.1

	Tolerances (Absolute %)					
Alcohol percentage	Simple mixture	Filtration				
(200°) > 95	93 – 100	91 – 100				
$(190^{\circ}) > 90$	88 – 95	86 – 95				
>80 – 90	± 3.5	± 4.5				
>70 - 80	± 3.0	± 4.0				
>60 - 70	± 2.5	± 3.5				
>40 - 60	± 2.0	± 3.0				
>20 - 40	± 1.5	± 2.5				
1 – 20	± 1.0	± 2.0				

Why use the starting menstruum?

The oil does not add significant volume to the final product because it will not dissolve to an appreciable extent in the water: ethanol mixture. Once the oil is removed, the ethanol content will be determined by the proportions of the soluble ingredients (in this case, the water and ethanol).

			Formula a	pproval: OMB No. 1	512-0095 (0	9/30/98)		
	DEPARTMENT OF THE TREASURY 1. FORMULA NUMBER							
BUREAU OF ALCOH		334						
FORMULA AND PROCES	2. KIND (e.g. Alco							
(See instructions attached-Prepare in triplicate, except if manufactured abroad)						PIRITS ON WHICH		
3. NAME OF PRODUCT.	ľ	4. CHECK IF	SUBMITTED	5. NUMBER OF DAYS TO COMPLETE PROCESS	DRAWBACK V	VILL BE CLAIMED.		
Lemon Flavor		WILL BE		COMPLETE PROCESS	190 Pr	oof Alcohol		
Lomon navor				1				
6. NAME OF THE MANUFACTURER & ADDRESS W	HEDE DDODLI		7 CHECK K	IND OF PRODUCT:	8 FORMULA	AS SUPERSEDED.		
BE PRODUCED (if multiple production sites, list other a				E/ MEDICINAL PREPARATION	o. Tortwol	to doi Endebeb.		
		,	FLAVOR/FI	AVORING EXTRACT				
Discount Extract Warehouse			☐ FOOD PR					
1401 Goinmy Way				ABSOLUTE ALCOHOL	10. ALCOHOL	CONTENT BY VOLUME		
•			VOLUME	USED. (See instructions)	OF FINISH	ED PRODUCT.		
Overthere Air, MD 45678					- 4 -	0.0		
			64.2	- 68.1	54.7	± 3.0		
11. IF MADE WITH RECOVERED SPIRITS:	12. IF FINISHED P	RODUCT IS TO	3E USED IN ALCO	HOLIC BEVERAGES:	-			
ELIGIBLE PLUS RECOVERED ABSOLUTE ALCOHOL BY VOLUME USED. (See instructions).	A. DOES PRODUC	T CONTAIN NATUR	AL FLAVORING? (YE	S OR NO)				
ALCOHOL BY VOLONIE OSLD. (See instructions).	B. DOES PROD	UCT CONTAIN (REATER THAN 0.	.1% ARTIFICIAL FLAVORING (Exc	luding Vanillin, Ethyl	Vanillin,Maltol, Ethyl Maltol)?		
	(Yes or No)	TO DED MILLIO	N. IN DDODUOT	05 1/41/11/11				
		TIS PER MILLIC	ON IN PRODUCT (OF: VANILLIN ETHYL MALTOL	ETHYL VANILLIN			
	D. DOES PRODUC		OR ADDITIVE?	IF YES, WHICH?				
				VITHOUT LIMITATION OR RESTRICTION	? (YES OR NO)			
13. FORMULA AND PROCESS (Use Additional Space on Reverse if Nece	essary).							
Alcohol 190 Proof				55.0 lbs (8.10	gal)			
Lemon oil				6.0 lbs	J,			
	D:O	TTD# 0	400\		-1\			
Lemon Extract (67.1% alcohol	, BigCo	IIB# 8	180)	1.0 lbs (0.14 g	aı)			
Water				15.0 lbs				
Glycerin				23.0 lbs				
				_0.00				
				400 !!				
Initial yield				100 lbs				
Actual yield (range)				88 - 94 lbs				
,								
(11.3 - 12.0 gal								
Process: Combine ingredients while mixing. Allow oil to separate. Discard top layer.								
Filter bottom layer with magnesium carbonate.								
			· = =					
14. CONTACT PERSON (Include Area Code & Phone No.)	15 SIGNATU	DE & TITI E	OF APPLICAT	TION OR AUTHORIZED AC	SENT	16. DATE.		
17. CONTACT FERSON (Include Area Code & Prione No.)	IJ. JIGINATU	IVE OF ILLEE	JI AFFLICAT	ION ON AUTHORIZED AC	JEINI.	IU. DATE.		
Dr. Igotago		.gotag	-··			6/21/2004		

Calculations:

- 1. Item 9 calculation Locate the eligible ethanol in the formula. Note that the Lemon Extract has a TTB approval for drawback.
 - a) Calculate the volume of absolute ethanol

$$55.0 \text{ lbs} \div 6.7943 \text{ lbs/gal} = 8.10 \text{ gal}$$

 $8.10 \text{ gal} \times 0.95 = 7.70 \text{ gal abs EtOH}$

b) next, divide by the final yield (actual yield)

low end of yield range 7.70 gal abs EtOH \div 11.3 gal = 0.681 or **68.1%**

high end of yield range $7.70 \text{ gal abs EtOH} \div 12.0 \text{ gal} = 0.642 \text{ or } 64.2\%$

This provides the range for the eligible alcohol in item 9.

- 2. Item 10 calculation
 - a) Volume of the starting menstruum. The starting menstruum is the ethanol and water along with other dissolved components (not the oil).

```
Ethanol = 55.0 lbs × 6.794 lbs/gal = 8.10 gal

Lemon Extract = 0.14 gal

Glycerin = 23.0 lbs × 9.79 lbs/gal = 2.35 gal

Water = 30.5 lbs × 8.328 lbs/gal = 3.66 gal

sum = 14.25 gal
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- 2. Item 10 calculation (cont'd)
 - b) Item 10 = [gal abs EtOH] ÷ [volume of starting menstruum]

volume of abs EtOH = 190 proof EtOH + EtOH from TTB # 8180

$$8.10 \text{ gal} \times 0.95 = 7.70 \text{ gal abs EtOH}$$

 $0.14 \text{ gal} \times 0.671 = 0.09 \text{ gal abs EtOH}$

$$\text{Sum} = 7.79 \text{ gal abs EtOH}$$

Divide this number by the volume of the starting menstruum

7.79 gal abs EtOH ÷ 14.25 gallons = 0.547 or **54.7%**

c) Apply the tolerance used for filtered products to item 10.

Tolerance table for item 10 – TTB form 5154.1

	Tolerances (Absolute %)					
Alcohol percentage	Simple mixture	Filtration				
(200°) > 95	93 – 100	91 – 100				
$(190^{\circ}) > 90$	88 – 95	86 – 95				
>80 – 90	± 3.5	± 4.5				
>70 - 80	± 3.0	± 4.0				
>60 - 70	± 2.5	± 3.5				
>40 - 60	± 2.0	± 3.0				
>20 - 40	± 1.5	± 2.5				
1 – 20	± 1.0	± 2.0				